

Patent
Attorney Docket: LYNN/0144

REMARKS

A new Table 7 was added to the specification to provide the chemical names of the diquaternary amines discussed in the specification.

Claims 7, 8, 11, 15-18, 20 and 47 have been stated as being awkward, ungrammatical or otherwise criticized. Appropriate changes have been made to these claims, substantially in accordance with the Examiner's suggestions. Applicant asserts that these changes are made for reasons unrelated to patentability.

Claims 46, 52, and 55-98 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 46 and 52 stand rejected because the Examiner has determined that adding the phrase "and combinations thereof" to the list of claimed sources of the iodide ion constituted new subject matter.

Applicant disclosed that the iodides may be in combination. In original claim 43, applicant disclosed that the iodide may be selected from potassium iodide, sodium iodide, magnesium iodide, calcium iodide and combinations thereof. (Claim 43) Because the original claim discloses that combinations of the claimed iodides may be used to recover Pd from a mixture, Applicant respectfully asserts that the phrase "and combinations thereof" is not new matter. Reconsideration and withdrawal of the rejection of claims 46 and 52 is respectfully requested.

Concerning claims 55-98, Applicant has prepared the following table to indicate specific support for the new claims. Reconsideration and withdrawal of the rejection of claims 55-98 is respectfully requested.

Claim	Citation to the Specification	Specific Language
55. The method of claim 27, wherein the heterocyclic ring structure is a cyclic piperazine derivative.	p.9, line 26	The distance was found to be 3.03 Å with a cyclical piperazine derivative.
56. The method of claim 1, wherein the diquaternary amine has an alkyl group having at least 10 carbon atoms.	p. 10, lines 12-14	However, in the examples disclosed herein, water insolubility of the diquaternary amine is ensured by including an alkyl halide with an alkyl group having at least ten carbon atoms.
57. The method of claim 1, wherein the diquaternary amine has at least	Id.	Id.

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one side chain having more than 12 carbon atoms		
58. The method of claim 1, wherein the diquaternary amine has at least one side chain having less than 7 carbon atoms	p. 18, lines 18-22, FIG. 1, Table 7	Each of the synthesized diamines was synthesized from one of the following five different diamines: N,N,N,N-Tetramethylethylenediamine (TMED), N,N,N',N'-Tetramethyl-1,4-butanediamine (TMBD), N,N,N',N'-Tetramethyl-1,3-propanediamine (TMPD), N,N,N',N'-Tetramethyl-1,6-hexanediamine (TMHD), or 1,4-Dimethylpiperazine (DMP)
59. The method of claim 1, wherein the one or more metal anion complexes comprise one or more precious metals.	p. 11, lines 14-16	The diquaternary amines thus synthesized are useful for extracting platinum group metals and other precious/valuable metals from aqueous solutions, preferably acidic solutions, wherein the metals form an anion complex.
60. The method of claim 1, wherein the diquaternary amine is prepared by the reaction between a tertiary diamine and alkyl halide.	p. 10, lines 3-5	The diquaternary amines used as extractants in the present invention were synthesized by combining tertiary diamines with a stoichiometric molar excess of alkyl halides to produce diquaternary ammonium halides
61. The method of claim 1, wherein the diquaternary amine is prepared from a diamine selected from tetramethylethylenediamine, tetramethylbutanediamine, tetramethyl propanediamine, tetramethyl hexanediamine and dimethylpiperazine	p. 18, lines 18-22,	Each of the synthesized diamines was synthesized from one of the following five different diamines: N,N,N,N-Tetramethylethylenediamine (TMED), N,N,N',N'-Tetramethyl-1,4-butanediamine (TMBD), N,N,N',N'-Tetramethyl-1,3-propanediamine (TMPD), N,N,N',N'-Tetramethyl-1,6-hexanediamine (TMHD), or 1,4-Dimethylpiperazine (DMP)
62-98. Claims to specific diquats	Table 7 and p. 10, lines 20-30.	

Claims 5 and 40 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and claim the subject matter which applicant regards as the invention. Claims 5 and 40 have been amended to correct their claim dependency. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 46 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Chinese Patent No. CN 1146495 issued to Fan, *et al.* Fan has disclosed a method for recovering palladium from nuclear wastes and from smelting processes. (Fan, page 5, lines 9-10 of ¶3). Applicant has amended claim 46 to include dissolving metals from materials having palladium and at least one other

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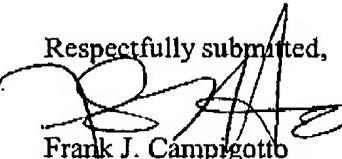
platinum group metal in an acidic solution. Applicant has claimed a process to recover valuable metals from materials having a mix of platinum group metals. As Applicant has disclosed, "Recovering precious metals from spent catalysts, electronic scrap and other similar sources include mixing these precious metal-containing materials with a strong acid, such as sulfuric acid, nitric acid and/or hydrochloric acid to dissolve the metals into an aqueous acidic solution from which the metals may be extracted through an extraction process." (Specification, p. 13, lines 16-19).

As stated in § 2143.03 of the MPEP, "To establish a *prima facie* case of obviousness, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be considered in judging the patentability of that claim against the prior art." (Citations omitted).

Applicant has amended claim 46 to include the steps of contacting a material containing palladium and at least one other platinum group metal with an acid, dissolving the palladium into the acidic aqueous solution, and selectively binding the palladium to the iodide. Fan does not disclose or suggest dissolving platinum group metals in an acidic solution and then *selectively* extracting palladium from the acidic solution. Fan merely addresses recovery of metals from nuclear waste or smelting processes. Fan does not, therefore, disclose each and every limitation claimed by Applicant and as such, Applicant respectfully asserts that a *prima facie* case of obviousness has not been presented. Reconsideration and withdrawal of the rejection is respectfully requested.

Applicant respectfully asserts that all claims are now in condition for allowance and respectfully requests that a Notice of Allowance be issued. If the Examiner believes that a telephone interview would expedite the examination of this application, the Examiner is invited to call the undersigned attorney at the convenience of the Examiner. In the event there are additional charges in connection with the filing of this Response, the Commissioner is hereby authorized to charge the Deposit Account No. 50-0714/LYNN/0144 of the firm of the below-signed attorney in the amount of any necessary fee.

Respectfully submitted,



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